

CLAIMS

- 1 1. A pipe cutter comprising:
2 a rotary head having an axis of rotation;
3 a housing gear coaxial with said rotary head portion, such that said
4 housing gear and said rotary head have a common axis of rotation;
5 a pipe slot extending into said rotary head portion and said housing gear;
6 a pipe cradle within said pipe slot for receiving a pipe;
7 a cutting wheel associated with said rotary head portion;
8 a wheel biasing member urging said cutting wheel to extend into said pipe
9 slot.
- 1 2. The pipe cutter of claim 1, further comprising a primary drive source operatively
2 connected to said housing gear to rotate said housing gear and pipe housing about
3 their common axis of rotation.
- 1 3. The pipe cutter of claim 2, wherein said primary drive source is operatively
2 connected to said housing gear through a gear system comprising:
3 a prime gear;
4 a first drive gear; and
5 a second drive gear, wherein said first and second drive gears are keyed
6 to said prime gear and keyed to said housing gear.
- 1 4. The pipe cutter of claim 2, wherein said primary drive source is operatively
2 connected to said housing gear through a gear system comprising:
3 a slot-engaging gear keyed to said housing gear and sized such that one
4 rotation of said slot-engaging gear results in one rotation of said housing gear,
5 said slot-engaging gear including a protrusion that engages a portion of said pipe
6 slot once during each rotation of said slot-engaging gear and housing gear.

- 1 5. The pipe cutter of claim 1, wherein said wheel biasing member is a plate spring
2 member having a slot therein for receiving a portion of said cutting wheel.
- 1 6. The pipe cutter of claim 5, wherein said cutting wheel extends from a
2 freewheeling shaft that extends into a substantially radially extending wheel slot
3 within said rotary head portion, and said plate spring member contacts said
4 freewheeling shaft to urge said shaft radially inwardly in said wheel slot.
- 1 7. The pipe cutter of claim 6, wherein said rotary head portion provides a cylindrical
2 internal wall, and said plate spring member contacts said cylindrical internal wall
3 at opposed edges of said plate spring member.
- 1 8. The pipe cutter of claim 7, further comprising:
2 a retraction hook that selectively engages said freewheeling shaft during
3 rotation of said rotary head portion in a retracting direction and, during rotation
4 of said cutting wheel in an opposite direction, ratchets about a pivot pin.
- 1 9. The pipe cutter of claim 8, wherein, when said retraction hook engages said
2 freewheeling shaft, continued rotation of said rotary head portion in said
3 retracting direction causes said freewheeling shaft to be urged radially outwardly
4 in said wheel slot.
- 1 10. The pipe cutter of claim 6, wherein said rotary head portion provides an external
2 plate spring surface, said wheel slot opens to said external plate spring surface,
3 and said plate spring is fixed to said rotary head portion to extend along said
4 external plate spring surface in a manner that biases said plate spring in the
5 direction of lying flush with said external plate spring surface.
- 1 11. The pipe cutter of claim 10, further comprising:

1 a retraction plate extending from said plate spring member; and
2 a retraction rod that selectively engages said retraction plate during
3 rotation of said rotary head portion in a retracting direction.

1 12. The pipe cutter of claim 11, wherein, when said retraction rod engages said
2 retraction plate, continued rotation of said rotary head portion in said retracting
3 direction causes said plate spring member to be urged away from lying flush with
4 said external plate spring surface.

1 13. The pipe cutter of claim 1, wherein said pipe cradle includes at least two
2 freewheeling support rollers that extend into said pipe slot.

1 14. The pipe cutter of claim 13, wherein said pipe cradle includes an adjustable block
2 that may be selectively set at varying positions within said pipe slot.

1 15. The pipe cutter of claim 14, wherein said adjustable block includes a plurality of
2 pipe-engaging surfaces.

1 16. A pipe cutter comprising:
2 a rotary head portion having an axis of rotation;
3 a housing gear coaxial with said rotary head portion, such that said
4 housing gear and said rotary head portion have a common axis of rotation;
5 a pipe slot extending into said rotary head portion and said housing gear;
6 a pipe cradle within said pipe slot for receiving a pipe;
7 a cutting wheel associated with said rotary head portion; and
8 a slot-engaging gear keyed to said housing gear and sized such that one
9 rotation of said slot-engaging gear results in one rotation of said housing gear,
10 said slot-engaging gear including a protrusion that engages a portion of said pipe
11 slot once during each rotation of said slot-engaging gear and housing gear.

- 1 17. A pipe cutter system comprising:
2 a primary drive source;
3 a gear system operatively connected to said primary drive source so as to
4 be driven by said primary drive source; and
5 a plurality of rotary head portions selectively individually engaged with
6 said gear system, wherein each of said plurality of rotary head portions include:
7 a housing gear;
8 a pipe slot;
9 a pipe cradle within said pipe slot for receiving a pipe; and
10 a cutting wheel extending into said pipe slot, wherein each pipe
11 cradle of each of said plurality of rotary head portions is sized to receive
12 a pipe of a different diameter.